

# Magnolia Drive / Lafayette Street Intersection Improvement and Streetscape Design

## SCOPE OF SERVICES

### Introduction

The purpose of the intersection improvement project at the intersection of Magnolia Drive and Lafayette Street is to redesign the intersection to enhance the capacity, efficiency and operation of the intersection. The project will extend approximately 200 feet to the east and west from the intersection. The southern limit of the project is just south of Chowkeebin Nene and the northern limit is Apalachee Parkway.

When constructed, this project will result in a better level of service for the intersection, reduce occurring stormwater problems, increase pedestrian, bike and auto safety and significantly improve the efficiency of the intersection.

The final product will be 100% engineering plans and permits needed to construct the project.

### A. DATA COLLECTION AND ENGINEERING DESIGN

#### 1. Data Collection

Following the Notice to Proceed, the Consultant shall begin preliminary assessments of the study corridor from an engineering standpoint. This task is largely of a data gathering nature and requires collecting available information regarding existing roadway, right of way, traffic, environmental, property, and cultural/social data which will be used to identify, develop and analyze various intersection and street scope design alternatives. This data shall be collected from readily available sources including, but not limited to, researching existing traffic information, GIS information, property appraiser's database, traffic accident database, existing survey information and field survey as necessary. The information should include customary data necessary to perform an evaluation of the location and design of the intersection and corridor. The Consultant shall also study the concepts and recommendations of the Lafayette Streetscape Study that was completed in 1999 and was approved by both the County and City commissions.

#### a. Existing Intersection and Corridor Characteristics

The Consultant shall compile the engineering data for the intersection design. The data compiled shall be in general accordance with that listed in Part I, Chapter 9, of the Florida Department of Transportation's (FDOT) Project Development and Environmental Manual necessary to conduct the study and prepare 100% complete construction plans. The Consultant shall develop a GIS CADD database that includes existing highway characteristics. CADD database information shall be compatible for use on aerial photography used for public presentations, corridor maps and alternative plans. Design alternative Plans will include the following components:

- |                                   |                        |
|-----------------------------------|------------------------|
| 1. Overall Design Component Plans | 3. Alt Plan 1 Geometry |
| 2. Typical Roadway Sections       | 4. Alt Plan 2 Geometry |

**b. Utilities and Railroads**

The Consultant shall request from utility providers, location drawings for the following existing and proposed utilities, which may influence location and design considerations:

- Overhead: Transmission lines, microwave towers, telephone lines, etc.
- Underground: Water, gas, sanitary sewer, force mains, power cables and phone cables
- Bridge attachments

The Consultant shall identify existing and proposed railroads which may influence location and design considerations. A preliminary utility contract shall be made by submitting sets of 11 x 17 aerial photo plan sheets of the intersection to the utility providers, incorporating known utilities. The following tasks will be included:

1. Procure existing utilities AsBuilt and GIS data
2. Prepare concept plans
3. Distribute to providers
4. Meet with providers to discuss needs and issues

**c. Transportation Plans**

Plans for known modes of transportation including surface, transit and non-motorized shall be obtained and include:

1. Urban Area Transportation Study
2. Lafayette Streetscape Study
3. Tallahassee/Leon County Comprehensive Plan
4. Transit, rail, bus, other
5. Non-motorized modes, including bikeways and pedestrian walkways.

**d. Soils Survey and Geotechnical Work**

The Consultant shall be responsible for procuring the geotechnical investigation. Unless the County Engineer directs otherwise, all geotechnical work performed shall be in general accordance with applicable FDOT standards and guidelines. The soil survey shall not commence until the Location and Design Acceptance has been received, unless special soil conditions or project requirements dictate otherwise. Prior to beginning the geotechnical investigation, the Consultant shall meet with the County Engineer to discuss the scope of services and project needs.

***Field Soil Investigation***

The investigation will be directed at identifying areas of unsuitable or problem soils that may impact the general design or route location. Install 1-20 feet deep soil boring every 500 feet of roadway; and, soil and ground water samples for corrosivity testing will be collected at a minimum frequency of 2 samples per 5,000 feet.

*Stormwater Management Facilities*

This investigation will provide data for preliminary evaluation of stormwater issues relative to reconstruction of existing stormwater facilities, infiltration, confining layers, seasonal high groundwater and suitability of excavated materials.

- Install 1-20 feet deep soil boring per acre of stormwater pond area.
- Install and conduct 1 double ring and 1 cased hole infiltration test per acre of stormwater pond area.

All laboratory testing will be performed in general accordance with FDOT applicable standards. Lab testing will vary depending on project needs. In general the tests for this phase will be:

*Geotechnical Laboratory*

- 1 moisture content per 5 feet of soil boring
- 1 grain-size test per 10 feet of soil boring
- 1 plasticity test per 20 feet of soil boring
- 1 organic content test per 40 feet of soil boring
- 2 corrosion series per mile of roadway

A Preliminary Geotechnical Report for the project route will be prepared that contains the results of a literature search of USGS materials and the USDA Soil Survey for the project area, a summary of the field investigation, laboratory tests, soil stratification and preliminary design recommendations.

A Preliminary Stormwater Report will be prepared for each stormwater management facility site investigated. Each Report will contain a brief description of the site, estimate of depth to seasonal high groundwater and an estimate of the permeability of the subsoil.

All laboratory testing will be performed in accordance with Florida Sampling and Testing Methods (FSTM) or ASTM or by related directives. Laboratory testing will include the following as required by the needs of the project and the type of soils encountered during the investigation:

- Organic Content (FM 1-T 267)
- Moisture Content (FM 1-T 265)
- Sieve Analysis (FM 1-T 088)
- Particle Size Analysis with hydrometer (FM 1-T 088)
- Specific Gravity (FM 1-T 100)
- Torvane Sensitivity
- Atterberg Limits (FM 1-T 89/90)
- Consolidation (FM 1-T 216)\*
- Triaxial (FM 1-T 234)
- Corrosion Series
- PH (FM 5-550)
- Resistivity (FM 5-551)
- Chloride Content (FM 5-552)

- Sulfate Content (FM 5-553)
- Limerock Bearing Ratio (FM 5-515)
- Aggregate Gradation (FM 1-T 30)
- Bitumen Extraction (FM 1-T 164)

\* With an unload/reload cycle near the pre-consolidation pressure.

The roadway report shall include, but not be limited to:

- Copies of U.S.G.S. and S.C.S. maps with project limits and beginning/ending station shown.
- A report of tests sheet, which summarizes the laboratory test results, the soil stratification and construction recommendations relative to Standard Indices 500 and 505. (All soils should be classified according to the AASHTO Classification System.)
- Estimated seasonal high and/or low groundwater levels.
- The design LBR value.
- Permeability parameters for water retention areas.
- The existing pavement /asphalt composition for possible reuse or grade control, if warranted.
- A description of the site and subsoil conditions, design recommendations and a discussion of any special considerations (i.e. removal of unsuitable material, recompression of weak soils, stabilization, estimated settlement time/amount, groundwater control etc.).
- An appendix that contains stratified soil boring profiles, laboratory test data sheets, design LBR calculation/graphs, and any other pertinent information.

In addition to the roadway report, the Consultant will also plot the stratified boring profiles on the original roadway cross-sections and have the geotechnical consultant review for completeness. A draft of the roadway report shall be submitted to the County Engineer for review, prior to incorporation of the geotechnical consultant's recommendations in the project design.

#### e. Preliminary Drainage Model

The Consultant will review and update the existing county area drainage model as it impacts this project. The review will include consideration of changes made to the model by the City of Tallahassee. Coordination with the City will be provided.

## **2. Preliminary Engineering Analysis**

### a. Project Need

The Consultant shall establish and/or verify the purpose and need for the project generally as outlined in Part 2, Chapter 5 of the Project Development & Environmental Manual. Transportation model runs will be conducted for up to two alternatives, Design Year corridor design traffic and turn movements will be furnished and K, D&T factors will be documented. To include the most recent updates in the transportation model, coordination with Tallahassee-Leon County will be provided. Traffic demand for study alternatives will be developed based upon the information provided in these two model runs.

**b. Traffic Support of Concept Development**

A series of conceptual solutions using various typical sections will be evaluated to determine the ability of those concepts to respond to identified multi-modal travel demands and community values. These concepts will be evaluated and will result in the definition of up to three alternatives to be considered in the conceptual design analysis. Related tasks will include roadway/intersection level of service analyses, a conceptual traffic signal warrant analysis at up to two intersection locations and recommending roadway geometric features and intersection laneage.

**c. Design Traffic Memo**

The Consultant will prepare a brief Design Traffic Technical Memorandum. This memorandum will document the methodology used in developing the traffic demand. The memorandum shall also identify the design traffic volumes for each alternate and the operating conditions/level of service for each alternative, including the no build and TSM (intersection improvements only) alternatives.

The Consultant will use the results of the traffic data collection activities and the initial traffic data to develop level of service calculations and documentation in support of the Preliminary Engineering report.

**3. Concept Development**

A series of conceptual design solutions, using various roadway and aesthetic design criteria, typical sections and typical plan views, will be developed and evaluated to determine the ability of those concepts to satisfy identified intersection and corridor design objectives. These design objectives will be developed in collaboration with the Client, and based upon functional needs analysis conducted in Task C. The conceptual design solutions will be evaluated and refined into a maximum of two alternatives for further review and evaluation during the Final Engineering Analysis phase.

The conceptual design process will include the following analysis:

The conceptual design solution analysis is based upon concepts brainstormed and identified by county and city staff. The Consultant will refine, analyze and include the following details:

- 1) Development of corridor roadway design criteria, including design speed, access management approach, lane widths, multi-modal philosophy and other engineering and aesthetic design criteria as appropriate.
- 2) Development of typical sections, plan geometry, and design studies to assist in the analysis.
- 3) "Fatal Flaw" analysis of design concepts to facilitate elimination of inappropriate concepts and further refinement of solutions.
- 4) Refinement of design concepts into a maximum of two intersection and corridor design alternatives.
- 5) Review of the process and recommended alternatives with the County.

#### 4. Preliminary Engineering Report

The information gathered shall be presented in a Preliminary Engineering Report in general accordance with Chapter 9 of FDOT's Project Development and Environment Manual and should establish or re-establish the need for the project. The report will include typical sections of various concepts and define two final alternatives for 30% plans development and evaluation. The concepts will be presented in typical section and in typical plan view with additional renderings depicting the new aesthetic character of the road.

#### B. 30% BASE SHEETS

The Consultant will retain a survey Subconsultant to conduct field surveys of the existing conditions within the corridor and prepare base sheets for use in developing 30% or Phase I Submittal plans for presentation in general accordance with the FDOT's Phase 1 Submittal Plans Preparation Manual (which is available online through FDOT's homepage). All Survey work will be in general accordance with Attachment A. For quality control, the prime Consultant will review and verify the subconsultant's field notes.

#### C. ALTERNATIVE ANALYSIS & FINAL ENGINEERING REPORT

The Consultant shall take the alternatives (fee calculation shall be based on the iterative analysis of two (2) alternatives) from the Preliminary Engineering Report, and overlay them on the 30% Base sheet plans. Alternative analysis will be in general accordance with Chapter 9 of FDOT's Project Development and Environment Manual and shall include: the consideration of horizontal and vertical alignment, typical cross section, preliminary right-of-way costs, preliminary drainage to the extent of identifying possible out falls, traffic data, geometry, maintenance of traffic, schematic sketches of intersections, interchanges, preliminary utility information, extent of improvement to locations of retention basins and/or impoundment as may be required, possible location of noise barriers, and other such design features that may be pertinent to the analysis of the environmental, engineering, and permitting impacts. The design of the proposed improvement shall be established and developed in conceptual form to facilitate comparative analysis. The engineering and permitting aspects of each alternate shall be addressed in the report. For each alternative, a plan to control traffic through the work area is to be considered along with other factors in determining the recommended alternative. The general types of items to be evaluated include the following:

- construction costs (includes drainage and stormwater management costs)
- right-of-way costs
- preliminary engineering costs (includes permitting)
- relocation plan and impacts
- business damages
- pedestrian / bicycle facilities
- transit alternatives
- parking
- maintenance of traffic
- comprehensive economic evaluation

- environmental impacts (includes social/cultural impacts)

## 5. Illustrations of Alternatives

The Consultant will develop Design Alternative Plans for up to two alternatives. These Design Alternative Plans will be of sufficient detail for illustration of the respective alternative and further analysis by the project team, which will include:

- Overall alternative design component plan at 1" = 200' ±
- Typical roadway sections
- Outline of access management philosophy
- Outline roadway design criteria assumptions for each alternative
- Roadway plan geometry drawn on aerial photography, at 1" = 40' (with color rendering) for use at various plotted scales including 11"x17" and 1" = 20' roll plots
- Roadway "working" profile grade line and working cross-sections
- Streetscape/landscape design enlargement studies sufficient for illustration of the respective alternatives features (lighting, street trees, pedestrian/bicycle furnishings, specialty signage, special features, etc.)
- "Layman's image" studies at up to three locations per alternative
- Before/after computer enhanced images at up to two locations per alternative. These images will be developed on corridor photographs shot in an elevated position from a bucket truck/fire truck (truck to be provided by the County)

These alternatives will also consider additional issues and criteria identified below. These plans and studies will be suitable for public display, public meetings and hearings.

## 6. Evaluation of Alternatives

For each of the alternatives, the following specific tasks and analyses will be completed, so that the alternatives can be evaluated and compared:

### a. Drainage Analysis and Report

The Consultant shall perform preliminary drainage design in order to determine potential outfall locations and preliminary sizes (volume and area) of required detention and/or retention facilities for storm water treatment or attenuation. The location and size of potential detention/retention areas will be determined for all viable alternate alignments. The Consultant shall prepare a Preliminary Drainage Report to document the results of the conceptual drainage analysis including the retention/detention pond siting analysis.

### b. Cost Analysis

The Consultant shall develop opinions of probable construction cost for each design alternative, including the quantity take-off of known components, opinions of probable construction cost for all alternatives, and opinions of probable order of magnitude right-of-way acquisition costs.

c. Access Management

The Consultant shall evaluate Access Management recommendations based on transportation engineering guidelines and anticipated traffic movement patterns as applicable to the project. Access points along the project will then be reviewed and addressed.

d. Traffic Control Concepts

The Consultant will develop conceptual maintenance of traffic approaches for each of the two evaluated alternatives. Concepts will be of sufficient detail to evaluate the impacts of the maintenance of traffic plans. Through the development of the two alternatives, traffic concepts will be considered including signalization, improvements to unsignalized intersections, complex intersection configurations and special signing.

e. Utility and Railroad Coordination

The Consultant will evaluate the impact to the existing utilities for each of the two alternatives and develop the conceptual relocation of each of the impacted utilities. The Consultant shall prepare a Location Hydraulic Report generally as described in Part 2, Chapter 24 of the PD&E Manual. The report shall be of the risk assessment level of detail.

f. Analysis of Social / Cultural / Socioeconomic / Archeological Impacts

*Social Impacts*

The Consultant is responsible for the following land use information:

- Collect available data regarding past and present land usage as well as available future land use plans, proposed developments, zoning guidelines, municipal comprehensive plans, and observed growth trends.
- Collect available data to prepare existing and future land use map(s) indicating as a minimum: residential, commercial, industrial, public, agricultural, and undeveloped areas adjacent to the alignment. This will include review of existing city and county databases and a windshield survey of the corridor.
- Collect available data on known active development activity in the highway corridor, especially preliminary and filed plats which have the potential for dedication of highway right-of-way. The Consultant must update information on any plat activity every three (3) months, until completion of the study.

*Cultural Features*

The Consultant shall collect available data to identify the Community Facilities generally as listed in Part 2, Chapter 9 of the PD&E Manual.

Since Federal funding is not anticipated for this project, identification of potential Section 4(f) lands (parks, recreation areas, wildlife refuges) is not required. These types of facilities and impacts to such will be identified as part of the land use information gathered in the previous task. The Consultant shall develop a CADD database that



includes all existing cultural features. CADD data base information shall be compatible for use on aerial photography used for public hearing presentations, corridor maps, and alternative plans.

### *Socio-Economic Impacts*

The Consultant shall perform an analysis of the social-economic impacts of two proposed alternatives generally as described in Part 2, Chapter 9, of the PD&E Manual. The Consultant shall collect data regarding past and present land usage as well as available future land use plans, proposed developments, zoning guidelines, municipal comprehensive plans, observed growth trends and their economic results.

### *Archaeological and Historical Features*

The Consultant will conduct a Phase I Cultural Resource Survey (CRS) of the project corridor. The purpose of the survey is to locate, identify and bound any archaeological resources, historic structures, and potential districts within the project area and assess their potential for listing on the National Register of Historic Places (NRHP). All work will be performed in general accordance with Part 2, Chapter 12 of the FDOT PD&E Manual, as well as the Florida Division of Historical Resources recommendations for such projects as stipulated in the Division's Historic Preservation Compliance Review Program Manual (Final Draft Document, November, 1990) and Rule Chapter 1A-46, Florida Administrative Code. The study will comply with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulation 36 CFR Part 800 (Protection of Historic Properties).

#### g. Background Research

Pertinent documents including historic aerials, other historic maps, the Florida Master Site File, reports, and articles will be reviewed to identify cultural resources previously recorded that may be located within the project area of potential effect (APE) and to provide a historical context for evaluating their significance. Following the background research, field evaluations will be conducted. The field methods will follow the recommendations presented in Chapter 4 of The Historic Preservation Compliance Review Program of the Florida Department of State Division of Historical Resources: A guide to the historic preservation provisions of state and federal environmental review laws (November 1990, Final Draft Document). Based on the environmental variables and previously recorded sites, the entire corridor has a high potential for containing archaeological sites. Shovel testing will be conducted where possible in the ditched sections of the road, at 25-meter intervals along the remainder of the corridor. Any areas observed in the field and considered to have a greater potential for containing cultural sites will be subject to additional testing at the discretion of the Project Archaeologist.

Shovel tests will measure 50 cm in diameter and will be excavated to a minimum depth of 100 centimeters below surface (cmbs) unless prevented by impenetrable soil conditions (clay), construction debris, or the water table. If cultural material is encountered at 100 cmbs, the shovel test will be continued until sterile soil is reached or until hand excavation of the test unit is no longer practicable. All excavated soil will be screened through ¼-inch mesh. 7

hardware cloth. The location of each shovel test will be marked on aerial photographs of the project area. The cultural content, stratigraphy, and environmental setting of each shovel test will be recorded in field notebooks. All of the project area will be visually inspected for the presence of sand mounds, middens, surface scatters of artifacts, historic refuse, foundations, or other cultural features.

Site boundaries will be determined on the basis of positive shovel tests, i.e., shovel tests that contain cultural material. In the case of isolated shovel tests that contain cultural material, additional shovel tests will be excavated at a reduced interval (10 meters) in order to bind the isolated discovery. These tests will be placed at 10-meter intervals from the positive shovel test and will continue until two consecutive negative tests or the limits of the APE have been reached. For each site, a Florida Site File Form will be completed, a sketch map drawn, and its location plotted on a USGS quadrangle map. The laboratory methods by which cultural material is cleaned, sorted, stabilized, analyzed, and recorded will be consistent with 36 CFR 79. Analyses will be conducted to identify the temporal period and cultural affiliation of the site.

A historic structure survey will be conducted by a qualified Architectural Historian, coincident with the archaeological survey. All historic structures identified within the project APE will be documented and evaluated for NRHP eligibility. They will be photographed and pertinent information regarding the architectural style and condition of the structure will be recorded on a Florida Historic Structure Site File form. The location of each structure will be plotted on aerial photographs and a USGS quadrangle map. Previous homeowners, tenants, or informants also will be questioned to determine the architect, date of construction, and integrity of any structure.

#### h. Analysis of Natural Impacts

Hydrologic and Natural Features Analysis: The Consultant shall collect data to perform an assessment of the impacts of the proposed alternatives in the following areas:

- Wetlands (Part 2, Chapter 18 of the PD&E Manual).
- Water Quality (Part 2, Chapter 20 of the PD&E Manual).
- Floodplains and Floodways (Part 2, Chapter 24 of the PD&E Manual).

State, Federal and local database information will be reviewed and field reconnaissance will be conducted to document and characterize wetlands and surface waters within the project area including potential stormwater management locations. Wetlands and surface waters will be mapped based on aerial interpretation and ground truthing. Field flagging of wetlands and surface waters is not included in this scope. The Consultant shall develop a CADD database that includes existing hydrologic and natural features. CADD data base information shall be compatible for use on aerial photography used for public hearing presentations, corridor maps, and alternative plans.

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**Identify Permit Conditions:** In conjunction with the collection of data related to wetlands the Consultant shall also obtain permit-related information about sites which may require dredge and fill permits, water quality permits, or stormwater discharge permits. This includes identifying all involved permit agencies.

**Wetland Impact Analysis:** The Consultant shall analyze the impacts to wetlands for proposed alternatives generally as described in Part 2, Chapter 18, of the PD&E Manual.

**Biological Assessment Data:** The Consultant shall collect data to perform a Biological Assessment for the proposed alternatives generally as described in Part 2, Chapter 27, of the PD&E Manual.

**Wildlife and Habitat Impact Analysis:** The Consultant shall analyze the impacts to wildlife and habitat by proposed alternatives generally as described in Part 2, Chapter 27, of the PD&E Manual.

**i. Analysis of Physical Impacts**

**Air Quality Assessment:** The Consultant shall collect data and perform the air quality impact analysis for the proposed alternatives generally as described in Part 2, Chapter 16, of the PD&E Manual.

**Noise Impact Data Collection and Impact Analysis:** The Consultant shall collect data and perform the noise impact analysis for the proposed alternatives generally as described in Part 2, Chapter 17, of the PD&E Manual.

**Contamination Impact Analysis:** The Consultant shall perform the analysis to complete the Contamination Screening Evaluation for up to two proposed alternatives generally as described in Part 2, Chapter 22, of the PD&E Manual.

**Water Quality Impact Analysis:** The Consultant shall analyze the impacts to water quality by proposed alternatives generally as described in Part 2, Chapter 20, of the PD&E Manual.

**Floodplain Impact Analysis:** The Consultant shall analyze the significance of encroachments to floodplains and floodways by all proposed alternatives as described in Part 2, Chapter 24, of the PD&E Manual.

**Construction Impact Analysis:** The Consultant shall analyze the construction impacts of proposed alternatives generally as described in Part 2, Chapter 30, of the PD&E Manual.

**j. Environmental Reports**

The Consultant shall document the results of the data collection efforts and the environmental analysis performed as part of this scope of work in the final engineering report. In addition, a separate noise report shall be prepared.

The Consultant shall also prepare draft and interim archeological reports for review and comment upon by the County prior to producing final documents. The reports will include a description of the number of shovel tests excavated, their depth, any constraints to excavation, and the number of shovel tests that contained sterile soil. All cultural sites and historic structures located during the survey will be shown on USGS quadrangle maps. In addition, a cultural resources summary will be provided. Each site and structure will be evaluated by the Principal Investigator as to its potential eligibility for listing on the NRHP. Base maps containing site location data will be submitted with the report to assure precise relocation of cultural resources. A FDHR Survey Log Sheet will be completed and included in an appendix. Computerized Florida Site File SmartForms will be completed for each resource documented during the survey.

**7. Comparison Analysis and Matrix**

For comparison of alternatives and identification of the preferred alternative, the Consultant shall develop and include in the Final Engineering Report a decision matrix. The matrix shall, at a minimum, include the factors listed above. Alternatives that are not permissible, by a permitting agency, may be analyzed and rejected, but shall not be included in the decision matrix analysis for viable alternatives. Additional guidance for the development and analysis of alternatives is provided in FDOT's Project Development and Environmental Manual. This will include a series of meetings where the Consultant will provide the analysis of alternatives, in plan & profile and cross-section as necessary to identify all potential impacts. State of the art graphics will be used to illustrate before and after conditions. This will be an iterative process that will result in final project identification, which will be identified in the final engineering report. This analysis will have as its goal to increase the probability of developing efficient and effective transportation solutions that are sensitive to the immediate community, cost effective, and environmentally sound alternative and reduce the necessity for decision making based on limited data or intuitive judgement. The analysis of the alternatives should identify any non-viable alternates and provide documentation for rejection. Based on this alternative analysis, a preferred alternative shall be selected and a conceptual design developed. A conceptual design for the selected alternative shall be included as part of the Final Engineering Report. Please note that development and analysis of viable and non-viable alternatives will require close coordination with all permitting agencies. Alternatives that are not permissible, by a permitting agency, may be analyzed and rejected.

## 8. Final Engineering Report

The Final Engineering Report shall summarize the findings of the Alternative Analysis performed by the Consultant, Project Team and public input. The report shall be prepared in customary format and shall present each alternative considered during the process, the conceptual design drawings and the alternative findings of the Consultant, County and City staff for each alternative. The Final Engineering Report will be in 8-1/2" x 11" format. Foldouts for aerials, schematics, and plan sheets are acceptable and encouraged.

### D. FINAL ENGINEERING PLAN (100%) AND PERMITS

The Consultant shall prepare reproducible 100% Roadway Plans based on the preferred alternative presented in the Final Engineering Report. These 100% plans shall be prepared in sufficient detail to define typical sections and provisions for pedestrians, bicycles, and other modes of transportation included in the study. To ensure sufficient detail, the plans shall show in the preliminary plan sheets the proposed right-of-way boundaries for the selected alternative.

The plans will be prepared for the selected alternatives to a 100% level, and shall include the following:

- Utilization of all survey data as a base plan
- Establishment of a profile grade line
- Development of plan and profile sheets (including geometric calculations)
- Typical section sheets
- Preliminary summary of quantities
- Develop working cross-section sheets at 100' intervals (determine tie-in points to adjacent properties)
- Conceptual signing and marking plan
- Access management plan
- Utility relocation concepts
- Right-of-way

E. PRODUCTS & SURVEYS TO BE DELIVERED:

- 1. Advance Notification and Kickoff Package.....1 draft copy / 1 final copy
- 2. Preliminary Engineering Report.....10 draft copies/ 15 final copies
- 3. Final Engineering Report.....10 draft copies/ 15 final copies
- 4. 100% Roadway Plans.....1 reproducible set / 5 blueline sets
- 5. Right-of-Way Plans.....1 reproducible set / 2 blueline sets
- 6. Baseline Control Survey.....1 reproducible set / Autocad 14 digital file
- 7. Survey Deliverables:
  - Field Books.....originals
  - Electronic Data Files.....ASCII format

ATTACHMENT A: Survey Requirements